SVENSK STANDARD
SS-EN 16870:2017

Fastställd/Approved: 2017-02-20
Publicerad/Published: 2017-02-22
Utgåva/Edition: 1
Språk/Language: engelska/English
ICS: 07.060; 13.060.45; 13.060.70

Vattenundersökningar – Vägledning för bedömning av det hydromorfologiska tillståndet i sjöar

Water quality – Guidance standard on determining the degree of modification of lake hydromorphology

Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka
Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

Ta del av det färdiga arbetet
Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standard-paket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete
Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.

Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence
As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work
We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception
With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00

Europastandarden EN 16870:2017 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 16870:2017.

The European Standard EN 16870:2017 has the status of a Swedish Standard. This document contains the official version of EN 16870:2017.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Biologiska vattenundersökningar, SIS/TK 426.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16870

February 2017

ICS 07.060; 13.060.45

English Version

Water quality - Guidance standard on determining the degree of modification of lake hydromorphology

Qualité de l'eau - Guide pour la détermination des conditions hydromorphologiques des lacs

Wasserbeschaffenheit - Anleitung zur Bestimmung der hydromorphologischen Eigenschaften von Seen

This European Standard was approved by CEN on 4 December 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 16870:2017 E

Contents

Page

European foreword

This document (EN 16870:2017) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard will enable broad comparisons to be made of the hydromorphological condition of lakes throughout Europe (e.g. for reporting by the European Environment Agency). In this document, the word 'lake' is used as a generic term for standing waters including natural lakes, reservoirs, excavated pits and other artificial water bodies.

The Guidance standard for assessing the hydromorphological features of lakes (EN 16039) describes a protocol for survey (field and remote sensing methods) and feature recording, whereas this standard gives guidance on assessing the condition of those features, and focuses especially on human pressures that affect lakes. This standard has applications for nature conservation, environmental impact assessment, lake management, and guiding lake restoration work.

The assessment of lake 'quality' in Europe has evolved over the past decades from its focus on chemical conditions to a more comprehensive ecological approach. The EC Water Framework Directive (WFD) has reinforced the need for this broader view of lake 'quality' through its requirement for determining 'ecological status' based on phytoplankton, phytobenthos, macrophytes, invertebrates and fish. The Directive also requires hydromorphological and physico-chemical conditions to be suitable for supporting biological communities. This standard, therefore, may be helpful for implementing the WFD when indicating the extent to which pressures might have caused a departure from natural hydromorphological conditions. In doing so it complements methods that have been developed within particular countries for assessment and reporting under the WFD. However, this standard makes no links between hydromorphology and biology, nor does it set any hydromorphological condition targets that should be achieved. Whereas decisions on management for individual lakes require expert local knowledge and vary according to lake type, this standard provides a framework to help those decisions to be made consistently.

1 Scope

This European Standard provides guidance on determining the degree of modification of lake hydromorphological features described in EN 16039. It enables consistent comparisons of hydromorphology between lakes within a country and between different countries in Europe, providing a method for broad based characterization across a wide spectrum of hydromorphological modification. Its primary aim is to assess 'departure from naturalness' for a given type of lake as a result of human pressures, and it suggests suitable sources of information that may contribute to characterizing the degree of modification of hydromorphological features. For wholly artificial lakes or reservoirs formed by damming rivers the aim is to assess the extent to which processes approximate to those in comparable natural water bodies. However, this standard does not replace methods that have been developed within particular countries for local assessment and reporting. Decisions on management for individual lakes require expert local knowledge and vary according to lake type. The assessment of the hydromorphological conditions as needed for the WFD (supporting the biological quality elements) remains in the competence of the individual Member States.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15843:2010, *Water quality - Guidance standard on determining the degree of modification of river hydromorphology*

EN 16039:2011, *Water quality - Guidance standard on assessing the hydromorphological features of lakes*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
bank
physical edge of the lake shore, or of the island(s) within, generally defined by a wave-cut break in slope at or near the water's edge of the lake, but can also be defined as the line along which riparian (terrestrial or land) conditions change to littoral in-lake conditions

[SOURCE: EN 16039:2011, definition 3.3]

3.2
bar
discrete, natural, depositional feature with shallow slope into water composed of unconsolidated material

3.3
bathymetry
systematic survey of size, shape and water depth distribution in a lake

Note 1 to entry: Bathymetry is the basis of deriving morphometric parameters and to predict thermal stratification, residence time and sediment redistribution processes.

[SOURCE: EN 16039:2011, definition 3.5]

3.4
catchment
drainage basin contributing water and sediment into a lake (also recognized as drainage area)

[SOURCE: EN 16039:2011, definition 3.10]

3.5
connectivity
continuity
uninterrupted movement of water, sediment and organisms into, out of and within a lake system

[SOURCE: EN 16039:2011, definition 3.11]

3.6
drawdown
lowering of lake levels caused by deliberate water release

3.7
dune
underwater ridge formed by wave or current action on the lake bed

3.8
ecological status
expression of the quality of the structure and functioning of aquatic ecosystems, by comparing the prevailing conditions with reference conditions

Note 1 to entry: As classified in accordance with Annex V of the EC Water Framework Directive.

3.9
embeddedness
extent to which fine sediment infiltrates littoral gravels

3.10
gauging board
staff gauge
graduated scale, fixed to a lake outlet or inflow structure, or directly into the substrate, used to measure the water level in a lake

3.11
geotextile
permeable fabric often used to reinforce or protect banks

3.12
groundwater table
surface of a body of underground water below which the soil or rocks are permanently saturated with water

3.13
hard engineering
stabilization of the shoreline using 'hard' materials including concrete walls, gabion baskets and sheet piling